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Soames on Frege: Provoking Thoughts

Michael Beaney

In 2003 Scott Soames published *Philosophical Analysis in the Twentieth Century*, a two-volume work billed as a history of analytic philosophy. In an essay review of this that I wrote for *Philosophical Books* (2006), I commended it as exemplifying analytic philosophy at its best: “clear, rigorous, and with great attention paid to the exposition of arguments”. At the same time, however, I criticized it for not being a genuine history of analytic philosophy. What we were given, I said, was “a series of rational reconstructions and criticisms of selected arguments in the history of analytic philosophy, chosen for their contributions to the Whiggish story Soames wants to tell”, a story which culminates in a Kripkean account of the a priori/a posteriori, necessary/contingent and analytic/synthetic distinctions. There were many omissions, the most glaring being the lack of any discussion of Frege. Soames had attempted to justify this omission by claiming that much of Frege’s work was technical, deserving separate treatment (2003, I, p. xvii). But as I pointed out, this was bizarre. Soames discussed Russell’s logicist project, which is hardly any less technical than Frege’s; and Frege’s ideas on sense and reference, to take just one example, are not only far from technical but are also fundamental to analytic philosophy and twentieth-century philosophy of language.

The book reviewed here (in part) is the first of a new and even larger multivolume work on the analytic tradition (Soames 2014). With one qualification, what I said in commending the earlier work applies here: Soames sets out the arguments as he reconstructs them in great detail, with premisses carefully formulated, and subjects them to rigorous critical analysis. Thinking through these reconstructions and Soames’ own arguments helps one to understand some of the deepest issues in analytic philosophy. The qualification is that the book is heavier-going than the earlier ones. As he writes in his preface, “Whereas the previous volumes grew out of lectures at Princeton intended for advanced undergraduates and beginning graduate students, these volumes will

be more demanding” (p. xi).¹ They are more demanding in a variety of ways: more knowledge of logic and the technical vocabulary of analytic philosophy is presupposed; it is assumed that we are already familiar with the basic debates and issues in analytic philosophy, at least as they have been explored in Soames’ own previous work; and one will struggle with what Soames says, even when he is offering summaries, if one has not read the relevant primary texts. In short, Soames takes it for granted that a reader will know where he is coming from.

So how does it fare as a history of analytic philosophy? The fact that there are five volumes projected suggests that there will be far fewer omissions to complain about, and indeed this is confirmed by the inclusion of two chapters on Frege (130 pages), with which the first volume – entitled ‘The Founding Giants’ – begins. Four chapters on Moore (also 130 pages) and six chapters on Russell (370 pages) follow, so there is still an imbalance, in my view, but at least we get an account of Frege to start. It is this account of Frege that I discuss here.

The first chapter is entitled ‘Foundations of Logic, Language, and Mathematics’ and offers an exposition of Frege’s logic and his logicist project. The second chapter is called ‘Critical Challenges’ and takes up a number of issues in Frege’s philosophy: his analysis of existential statements, his doctrine of the ‘unsaturatedness’ of concepts, his conception of truth, his account of identity statements, his hierarchy of senses, the transparency of thoughts, indexicality, the epistemology of his logicist reduction, and Russell’s paradox. I cannot consider all these issues here. I shall merely offer some remarks on a problem that brings together a number of the issues that Soames discusses: the problem of the criterion of identity for thoughts. Before doing so, though, let me say something about the initial exposition and make some general comments about his account of Frege.

In a projected five-volume history of analytic philosophy one might expect a first chapter to say something about the historical background to set the scene. What were the key philosophical debates and movements in the nineteenth century? What were the developments in mathematics that both inspired and made possible Frege’s and Russell’s logicist projects? Many analytic

¹ Unless otherwise indicated, page references will be to Soames 2014.

philosophers from Frege, Russell and Moore onwards have criticized Kant's views, such as his transcendental idealism and conception of the synthetic a priori. So what problems did Kant's philosophy raise? The nineteenth century saw a range of different responses, including various forms of German idealism, neo-Kantianism, scientific naturalism, psychologism, historicism, positivism, and British idealism, as well as the beginnings of phenomenology. So where does analytic philosophy fit into this bigger picture? Were there assumptions that the early analytic philosophers shared with their immediate predecessors and contemporaries? Was there a sense at the time of any intellectual crises that may have contributed to the emergence of analytic philosophy? Was indeed it recognized as a new form of philosophy when it emerged?

Soames' first volume begins with a short preface that summarizes its contents, but there is nothing at all that even raises these questions, let alone offers any answers.² Are we meant to already know this background? Or is it seen as irrelevant? The first chapter launches straight into a 60-page exposition of Frege's basic ideas. There is an 'overview' at the start, but this amounts to less than two pages: the first paragraph provides a 15-line biography, the second paragraph summarizes Frege's main works, and the third and final paragraph introduces what follows. His discussion in this first chapter, Soames writes, "will not strictly follow the chronological development of Frege's thought" (p. 5). This is an understatement. There is little indication that Frege's thought had any development at all. We are given a specification of "a simple logical language ... presented in a more convenient symbolism than the one Frege used" (p. 5), an account of the sense/reference distinction, a discussion of his conception of logic, a summary of the main ideas of *The Foundations of Arithmetic*, and a brief (6-page) sketch of his logicist reduction.

In his pioneering book, *Frege: Philosophy of Language* (1973), Michael Dummett notoriously claimed that the logical theory presented in Frege's *Begriffsschrift* of 1879 "is astonishing because it has no predecessors: it appears to have been born from Frege's brain unfertilized by external influences" (p. xxxv). As I have remarked elsewhere (2013b, p. 250), it is hard to think of a more

² For essays that do raise these questions and offer answers, see Beaney 2013a.

absurd claim about an historical event: it is like a biologist announcing a case of spontaneous generation. Of course there were influences on Frege's logical theory, most importantly, the mathematical theory of functions, which had been developed in the nineteenth century and on which Frege had himself worked in his *Habilitationsschrift* of 1874. Even the name 'Begriffsschrift' was not new.³

Soames makes no such absurd claim, but there is nothing in his account to show how wrong this claim is. Soames proceeds as if Frege's logic – and all his philosophical ideas – were unfertilized by external influences. Indeed, he also proceeds as if Frege's earlier ideas had no influence on his later ideas. The distinction between sense and reference, for example, was motivated by the problems that Frege came to realize that his own earlier notion of 'content' faced.⁴ There is no mention of this in Soames' account of the distinction, which is simply explained as an attempt to solve 'Frege's puzzle', understood as a timeless problem concerning the substitutability of co-referential terms in a sentence. Why was such a puzzle a problem for Frege? To be sure, it threatens principles of compositionality, as Soames discusses. But why was this important in the overall context of Frege's logicism? We are not told. A history of (Frege's role in) analytic philosophy should surely address such a fundamental question. This is just one example of the lack of concern with the development of Frege's thought or any of the influences upon it.

Scholarship has come a long way since Dummett's pioneering book, published more than 40 years ago. Dummett himself, despite some initial kicking and screaming (Dummett 1981), came to recognize the importance of locating

³ For an account of this, see Thiel 2005. Incidentally, at the end of the 'Overview' to his first chapter, Soames writes: "In what follows I refer to Frege's works under their English titles—with the exception of the *Begriffsschrift*, the awkwardness of the English translation of which is prohibitive" (p. 5). 'Begriffsschrift' literally means 'concept-script', 'Begriff' meaning 'concept' and 'Schrift' meaning 'script'. I see nothing awkward about this; if anything, the German term is more awkward, certainly when used as an English word. I use 'Begriffsschrift' myself, however, because that is the name that Frege gave to his logical system and it reminds us that we are indeed talking about Frege's own 'concept-script' or 'conceptual notation' (to use the two terms that have often been used to translate Frege's term).

⁴ Something similar can be said in the case of Russell: his theory of descriptions was motivated by the problems that he came to realize that his own earlier theory of denoting faced (given other commitments he had). This was something that Soames ignored in his earlier 2-volume work (2003), and was criticized for. It is good to see that he considers Russell's earlier theory in this new 5-volume work. Perhaps we will have to wait for the next 8-volume work to find more justice being done to the development of Frege's philosophy.

Frege in the broader history of philosophy (see e.g. Dummett 1988) and his later book on Frege's philosophy of mathematics (1991) is much more sensitive to the development of Frege's thinking. But whilst Soames refers to Dummett's first book,⁵ there is no mention of any of his later books or papers. In fact, the reference to any of the literature that has since been written on Frege is astonishingly thin. Other than Dummett 1973 and writings by either him or Nathan Salmon, Soames only refers in the two chapters on Frege to the following works on Frege (in alphabetical order): Beaney 1996, Burgess 2005, Currie 1982, Dejnozka 1981, 1996, Kripke 2008, Perry 1977, 1979, Thau and Caplan 2000, Yourgrau 1982, 1986–87.⁶ Of these, Currie's introduction to Frege's philosophy receives by far the most citations (twelve in all), suggesting that for Soames, the literature on Frege pretty much stopped in 1982. Currie's book is a fine introduction (and was useful to me when I was a graduate student in the mid-1980s trying to wean myself off Dummett's Frege), but to imply that there is little else worth reading is inexcusable.

Here is a list of some of the philosophers who have made important contributions to our understanding of Frege's philosophy since Dummett's pioneering work (again in alphabetical order): Gordon Baker, David Bell, Patricia Blanchette, George Boolos, Robert Brandom, Tyler Burge, Wolfgang Carl, James Conant, William Demopoulos, Cora Diamond, Gareth Evans, Juliet Floyd, Gottfried Gabriel, Warren Goldfarb, Dirk Greimann, Leila Haaparanta, Peter Hacker, Bob Hale, Richard Heck, Wolfgang Kienzler, Lothar Kreiser, Michael Kremer, Wolfgang Künne, James Levine, Danielle Macbeth, Robert May, John McDowell, Ulrich Pardey, Eva Picardi, Michael Potter, Erich Reck, Thomas Ricketts, Matthias Schirn, Peter Simons, Hans Sluga, Peter Sullivan, Jamie Tappenden, William Taschek, Mark Textor, Christian Thiel, Charles Travis, Kai Wehmeier, Joan Weiner, David Wiggins, Mark Wilson, Crispin Wright. None of their work on Frege is even mentioned by Soames.

⁵ It is inaccurately cited in the bibliography, however. This is not the only error in the bibliography.

⁶ There are a few other references to works not specifically on Frege, such as Kneale and Kneale 1962 and Kaplan 1977. There are also a couple of other works on Frege cited in the bibliography – Rayo 2002 and Resnik 1980 – which are not referred to in the two chapters on Frege.

Anyone who knows the writings of at least some of these philosophers will know some of the issues that have been debated: the German (mathematical and philosophical) influences on Frege, the changes in Frege's thinking and in his logical system itself from the *Begriffsschrift* to the *Basic Laws*, the tensions in Frege's early notion of content, Frege's 'universalist' conception of logic, the extent to which Frege pursues metalogical investigations, the relationship between judgement and truth, Frege's conception of self-evidence, the 'unsayability' of the concept/object distinction, the significance of 'elucidation', the paradox of analysis, the distinction between 'analysis' and 'decomposition', the role of the context principle, the problem of senses without referents, Frege's view on vagueness, the translation of 'Bedeutung' and its use in the case of names, concept-words and sentences, the rediscovery of what is now known as Frege's theorem, the status of Hume's (or, as it is better called, the Cantor-Hume) Principle, the question of how much of Frege's logicism can be reconstructed, and Frege's theory of real numbers, to mention some of the most obvious issues.⁷ One or two of them are touched on briefly by Soames, but the vast majority receive no consideration at all.

Does this matter? In two chapters (130 pages), it is impossible to do justice to all the topics that have been debated in the burgeoning secondary literature on Frege. But in a work that claims to offer a definitive history of analytic philosophy (as announced on the inside front cover), one would expect at least some mention of these topics, if only in footnotes. Any reader should be made aware of what issues have been debated, with references to the relevant literature provided to enable them to explore the issues themselves and make up their own mind should they wish. Not to acquaint oneself with the key debates in a given area is a failing of scholarship and not to mention them in writing a supposedly definitive book in the field is a failing of duty.

Even with Soames' own purposes in mind, this is unfortunate. Three of the issues just mentioned, which are interrelated, illustrate this. Over the last

⁷ For a guide through the literature, see the entry on Frege in the online 'Oxford Bibliographies' (Beaney 2014). For a 4-volume collection of the most significant papers published between 1986 and 2005, see Beaney and Reck 2005. The introductions to these four volumes give an indication of the issues that were debated in this period – all of which are still being discussed today.

thirty years there has been a huge renaissance of interest in Frege's logicism, beginning with Crispin Wright's book on Frege's conception of numbers as objects (published in 1983, so just a year after Currie's book). Wright was the first to rediscover Frege's theorem – that the Dedekind-Peano Axioms can be deduced, within second-order logic, from the Cantor-Hume Principle, the principle that states that the number of *F*s is equal to the number of *G*s iff the concept *F* is equinumerous [*gleichzahlig*] to the concept *G* (i.e., the *F*s and the *G*s can be one-one correlated). This led to discussion (by Bob Hale and Crispin Wright, among others) of whether the Cantor-Hume Principle can be regarded as logical and to detailed investigation (especially by Richard Heck) of exactly how much of Frege's logicist project can be resurrected.⁸ This raises questions about the nature of logic, analyticity, sameness of sense, and so on, which are precisely among Soames' own main concerns, so it is baffling that this recent work on Frege is ignored in his book. At the very end of the first chapter we get two sentences that do allude to this neo-Fregean project, with a solitary reference to the work of Burgess (2005). But that is all. This is a real lost opportunity.

Reading more of the secondary literature – and indeed, more of the primary literature – would also have helped in appreciating the development of Frege's thought. There are all sorts of little ways in which Soames' failure to appreciate this leads to distortions and errors in his account. In explaining Frege's logic, for example, he writes: “[$\forall x\Phi x$] is true iff every object *o* is such that the concept designated by Φx assigns *o* the value the True iff *o* “satisfies” the formula Φx iff replacing occurrences of ‘*x*’ in Φx with a name *n* for *o* would result in a true sentence.

This is Frege's breakthrough insight—creating the foundation of the new logic of quantification—into how quantificational sentences are to be understood.” (p. 10) Aside from the fact that talk of ‘satisfying’ here is anachronistic, Frege's idea of concepts as functions that map objects onto truth-values, which is alluded to here, was not actually formulated until 1891 (in ‘Function and Concept’), some 12 years *after* the creation of quantificational logic in the *Begriffsschrift*. So it cannot have been the ‘breakthrough insight’. (It is surely absurd, in any case, to suggest that the sophisticated thought Soames here

⁸ For references, see the relevant sections of Beaney 2014 (cited in the previous note).

articulates could possibly have been the breakthrough insight! Did Frege wake up one morning in 1877 or so, no doubt unfertilized by any external influence, with (a German version of) such a sentence in his head?) The story of his creation of quantificational logic needs far more careful handling.

Other examples could be given. More justice could be done to the fact that Frege stops talking of the ‘analyticity’ of arithmetic after 1884 (*pace* what Soames implies on e.g. pp. 13 and 87), to Frege’s preference for the term ‘mode of determination’ rather than ‘mode of presentation’ in explaining sense (Soames uses the latter throughout his discussion),⁹ and to the problems caused in Frege’s central argument in the *Foundations* by his failure to distinguish ‘Inhalt’, ‘Sinn’ and ‘Bedeutung’ (which Soames glosses over on pp. 46–7). I also think that Soames gets the story wrong (on pp. 86–96) of the relationship between Frege’s account of identity statements in the *Begriffsschrift* and his famous argument at the beginning of ‘On Sense and Reference’, but that would require more explanation than I have space here to provide.¹⁰ Throughout his two chapters Soames also uses the terms ‘mean’ and ‘meaning’ in ways that are confusing in contexts where ‘sense’ and ‘reference’ are being discussed (e.g. on pp. 71–2).

As I was reading Soames’ account of Frege, there were quite a few occasions on which I found myself thinking, “Yes, but if you look a little further on in the text from which you are citing, then you will find an answer to your criticism”, or “Ok, but if you look at this other text, then you will find that the issue is more complex”. I had the latter reaction, for example, in reading his critique of Frege’s treatment of existence (pp. 60–70). A key text, which Soames does not consider, is his ‘Dialogue with Pünjer on Existence’, where Frege makes clear his view that our use of names, in scientific contexts, *presupposes* that they are not empty.¹¹ This is the other side of the coin to his analysis of existential statements as involving an assertion about a concept. I had the former reaction, for example, in reading what Soames says about the epistemological motivation for Frege’s logicist reduction (pp. 114–20). Citing a passage from ‘Logic in

⁹ I pointed out the significance of this in my introduction to Frege 1997: pp. 22–24.

¹⁰ I gave my own story in Beaney 1996, ch. 6; summarized in Beaney 2011, §5. I also discuss the problems in Frege’s early notion of content and why identity statements were important for Frege in Beaney 2007. See also Kremer 2010; Textor 2011, esp. ch. 4.

¹¹ The dialogue, which took place some time before 1884, is translated in Frege 1979, pp. 53–67.

Mathematics' (1914), he criticizes Frege for treating his logicist definitions as 'analytic definitions' that require an act of 'immediate insight' to be seen as correct. But Frege himself replies to this criticism in the very next three paragraphs, which Soames simply ignores. What Frege says in these paragraphs is extremely significant. I have argued that it offers Frege's most considered response to the paradox of analysis.¹² With Soames' own interests in mind, this represents another missed opportunity.

This is an appropriate point on which to conclude my review by turning to what I found most interesting in Soames' account of Frege. In the second chapter he discusses nine 'critical challenges', which might easily be read as nine separate problems that he detects in Frege's philosophy. Weaving in and out of his criticisms, however, is a central theme that provides more unity to those criticisms than he himself does justice to. Certainly, if the theme had been made more explicit from early on, then it might have given more shape to his critique, which comes across as fragmentary. This is the theme of Frege's conception of thought, reflected, in particular, in the question of the criterion of identity for thoughts. Frege himself offers different formulations of such a criterion in different places, even in the same year. In 'A Brief Survey of my Logical Doctrines', dating from 1906, for example, he offers a very fine-grained criterion: two sentences express the same thought iff anyone who recognizes the content of one as true must immediately recognize the content of the other as true, and vice versa.¹³ In a letter to Husserl also dating from 1906, however, he states a much coarser-grained criterion: essentially logical equivalence (with some qualifications).¹⁴ Other criteria can be formulated from remarks Frege makes elsewhere, and a variety of criteria – which usually fall somewhere between the two Frege himself offered in 1906 – have been offered and debated in the secondary literature.

¹² See e.g. Beaney 1996, ch. 5; 2005. Incidentally, the term 'analytic definition' is potentially misleading. It translates 'zerlegende Definition', not 'analytische Definition'. It contrasts with 'aufbauende Definition', as I point out in an editorial note to the passage as reprinted in Frege 1997, p. 316.

¹³ See Frege 1997, pp. 299–300.

¹⁴ See Frege 1997, pp. 305–6.

This is not the place to articulate a criterion that captures as many of Frege's views as possible.¹⁵ Indeed, in the end, one must recognize that there is an ineliminable tension in Frege's philosophy – as Soames brings out very well in his own account, especially in his discussion of indexicality (cf. p. 110). Frege's fine-grained criterion suggests that he endorses a transparency principle – that “two sentences that express the same thought will be recognized as making the same or equivalent claims by anyone who understands them”, as Soames puts it (p. 73). But as Frege himself repeatedly stressed, the same thought can be expressed in sentences of radically different form: we might call this his transformation principle.¹⁶ So there might indeed be hard conceptual work to be done in coming to recognize that two sentences express the same thought, which pushes us in the direction of a coarser-grained criterion. The problem of the status of the Cantor-Hume Principle is precisely a site where the transparency and transformation principles collide.

The tension is of crucial importance for Frege's whole project of analysis, not just his logicist definitions but also his logical elucidations. The problem is obvious in the case of his logicism: does making a claim about the number 0, for example, really express the same thought as making the corresponding claim about the extension of the concept *equinumerous with the concept 'not identical with itself'*? Frege's logicist definitions hardly seem obviously true. But Soames raises the same objection to Frege's explanation of his most basic logical ideas: ‘Jesus is a man’ and ‘Jesus falls under the concept *man*’, for example, arguably express *different* thoughts (pp. 71 ff.). However, this threatens logical theory itself.¹⁷ (And if ‘Jesus falls under the concept *man*’ can in turn be ‘re-expressed’ as ‘The first-level concept *man* falls within the second-level concept *is instantiated by Jesus*’, and so on, then a whole hierarchy of thoughts can be generated, each higher one looking less and less like the one we started with.)

¹⁵ For discussion, see Beaney 1996, §8.1.

¹⁶ See e.g. ‘On Concept and Object’: “we must not fail to recognize that the same sense, the same thought, may be variously expressed ... If all transformation of the expression were forbidden on the plea that this would alter the content as well, logic would simply be crippled; for the task of logic can hardly be performed without trying to recognize the thought in its manifold guises.” (1997, pp. 184–5, fn. G)

¹⁷ Cf. the passage quoted from ‘On Concept and Object’ in the previous note.

What is lurking under all of this is the paradox of analysis. As mentioned above, however, this is where Frege's discussion in 'Logic in Mathematics' at least suggests a way forward. The aim of logical analysis, Frege writes, is to articulate senses clearly.¹⁸ Rephrasing 'Jesus is a man' as 'Jesus falls under the concept *man*' is precisely a way of clarifying its sense. In the process we come to recognize that the two sentences have – or count as having – the same sense. We also learn, in other words, what it means to talk of 'expressing the same thought': the appropriate notion of thought is crystallized out in the very process of (re)conceptualization. Admittedly, however, developing Frege's response in this way is to go beyond what he himself says in 'Logic in Mathematics'. It also requires us to give up – or at least qualify – the Platonism about thoughts that he was to articulate so famously four years later, in 'Der Gedanke' (1918). But that, it seems to me, is the right way to go.

I can only gesture here at what I think is the underlying philosophical issue in Soames' account (the paradox of analysis) and how it might be resolved (by recognizing the dynamic and conceptually constructive character of our processes of analysis). But I hope this is enough to indicate my main criticism of Soames' account: he could and should have made much more of this issue. One's first impression of his exposition in chapter 1 and his 'critical challenges' in chapter 2 is of simply setting Frege up to be dismembered. But Frege's philosophy should not be seen as just a collection of errors and dead ends, but as a source of new ideas, concepts and arguments – and yes, problems and tensions as well – by means of which we can think through some of the most fundamental issues of analytic philosophy as it developed subsequently. Thinking through such issues is precisely the task that Soames has set himself in his admirably ambitious new multivolume work on the analytic tradition. In his first two chapters on Frege there is certainly material that contributes to this in a thought-provoking way.

¹⁸ Frege 1997, p. 317.

References

- Beane, Michael, 1996, *Frege: Making Sense*, London: Duckworth
- , 2005, 'Sinn, Bedeutung and the Paradox of Analysis', in Beane and Reck 2005, IV, pp. 288–310
- , 2006, 'Soames on Philosophical Analysis', *Philosophical Books*, 7: 255–71
- , 2007, 'Frege's Use of Function–Argument Analysis and his Introduction of Truth-Values as Objects', *Grazer Philosophische Studien*, 75: 93–123
- , 2011, 'Frege', in Barry Lee, (ed.), *Philosophy of Language: The Key Thinkers*, London: Continuum, 2011, pp. 33–55
- , 2013a, (ed.), *The Oxford Handbook of the History of Analytic Philosophy*, Oxford: Oxford University Press
- , 2013b, 'Analytic Philosophy and History of Philosophy: The Development of the Idea of Rational Reconstruction', in Erich H. Reck, (ed.), *The Historical Turn in Analytic Philosophy*, Basingstoke: Palgrave Macmillan, pp. 231–60
- , 2014, 'Gottlob Frege', *Oxford Bibliographies in Philosophy*, ed. Duncan Pritchard, New York: Oxford University Press; online at: www.oxfordbibliographies.com/browse?module_0=obo-9780195396577
- Beane, Michael and Erich H. Reck, (eds.), 2005, *Gottlob Frege: Critical Assessments of Leading Philosophers*, 4 vols., London: Routledge
- Burgess, John P., 2005, *Fixing Frege*, Princeton: Princeton University Press
- Currie, Gregory, 1982, *Frege: An Introduction to his Philosophy*, Sussex: Harvester Press
- Dejnozka, Jan, 1981, 'Frege on Identity', *International Studies in Philosophy*, 13: 31–41
- , 1996, *The Ontology of the Analytic Tradition and Its Origins*, Lanham, Maryland: Littlefield Adams
- Dummett, Michael, 1973, *Frege: Philosophy of Language*, London: Duckworth; 2nd edn. 1981
- , 1981, *The Interpretation of Frege's Philosophy*, London: Duckworth
- , 1988, *Ursprünge der analytischen Philosophie*, Frankfurt: Suhrkamp; rev. and publ. in English as Dummett 1993
- , 1991, *Frege: Philosophy of Mathematics*, London: Duckworth
- , 1993, *Origins of Analytical Philosophy*, London: Duckworth; rev. English ed. of Dummett 1988
- Frege, Gottlob, 1874, 'Methods of Calculation based on an Extension of the Concept of Quantity [Magnitude]', tr. H. Kaal in Frege 1984, pp. 56–92
- , 1879, *Begriffsschrift, eine der arithmetischen nachgebildete Formelsprache des reinen Denkens*, Halle: L. Nebert; Preface and most of Part I tr. M. Beane in Frege 1997, pp. 47–78
- , [1884], '[Dialogue with Pünjer on Existence]', tr. in Frege 1979, pp. 53–67
- , 1884, *Die Grundlagen der Arithmetik*, Breslau: W. Koebner; selections tr. M. Beane in Frege 1997, pp. 84–129
- , 1891, 'Function und Begriff', Jena: Hermann Pohle; tr. P. T. Geach as 'Function and Concept' in Frege 1997, pp. 130–48

- ____, 1892a, 'Über Sinn und Bedeutung', *Zeitschrift für Philosophie und philosophische Kritik*, 100: 25–50; tr. M. Black as 'On Sense and Reference' in Frege 1997, pp. 151–71
- ____, 1892b, 'Über Begriff und Gegenstand', *Vierteljahrsschrift für wissenschaftliche Philosophie*, 16: 192–205; tr. P. T. Geach as 'On Concept and Object' in Frege 1997, pp. 181–93
- ____, 1893/1903, *Grundgesetze der Arithmetik, begriffsschriftlich abgeleitet*, Jena: H. Pohle, Vol. I 1893, Vol. II 1903; selections tr. M. Beaney and P. T. Geach in Frege 1997, pp. 194–223, 258–89
- ____, 1906, 'A Brief Survey of my Logical Doctrines', tr. in Frege 1979, pp. 197–202; extract in Frege 1997, pp. 299–300
- ____, 1914, 'Logic in Mathematics'; tr. in Frege 1979, pp. 203–50; extract in Frege 1997, pp. 308–18
- ____, 1918, 'Der Gedanke. Eine logische Untersuchung', *Beiträge zur Philosophie des deutschen Idealismus*, 1: 58–77; tr. P. T. Geach as 'Thought' in Frege 1997, pp. 325–45
- ____, 1979, *Posthumous Writings*, tr. P. Long and R. White, Oxford: Blackwell
- ____, 1984, *Collected Papers on Mathematics, Logic, and Philosophy*, ed. B. McGuinness, tr. M. Black *et al.*, Oxford: Blackwell
- ____, 1997, *The Frege Reader*, ed. with an introd. by M. Beaney, Oxford: Blackwell
- Kaplan, David, 1977, 'Demonstratives', in J. Almog, J. Perry and H. Wettstein, (eds.), *Themes from Kaplan*, Oxford: Oxford University Press, 1989, pp. 481–563
- Kneale, William and Kneale, Martha, 1962, *The Development of Logic*, Oxford: Clarendon Press
- Kremer, Michael, 2010, 'Sense and Reference: The Origins and Development of the Distinction', in M. Potter and T. Ricketts, (eds.), *The Cambridge Companion to Frege*, Cambridge: Cambridge University Press, pp. 220–92
- Kripke, Saul, 2008, 'Frege's Theory of Sense and Reference: Some Exegetical Notes', *Theoria*, 74: 181–218
- Perry, John, 1977, 'Frege on Demonstratives', *Philosophical Review*, 86: 474–97
- ____, 1979, 'The Problem of the Essential Indexical', *Noûs*, 13: 3–21
- Rayo, Augustine, 2002, 'Frege's Unofficial Arithmetic', *Journal of Symbolic Logic*, 67: 1623–38
- Resnik, Michael, 1980, *Frege and the Philosophy of Mathematics*, Ithaca: Cornell University Press
- Soames, Scott, 2003, *Philosophical Analysis in the Twentieth Century*, Volume 1: *The Dawn of Analysis*, Volume 2: *The Age of Meaning*, New Jersey: Princeton University Press
- ____, 2014, *The Analytic Tradition in Philosophy*, Volume 1: *The Founding Giants*, New Jersey: Princeton University Press
- Textor, Mark, 2011, *Frege on Sense and Reference*, London: Routledge
- Thau, Michael and Ben Caplan, 2000, 'What's Puzzling Gottlob Frege?', *Canadian Journal of Philosophy*, 31: 159–200

- Thiel, Christian, 2005, 'Not Arbitrarily and Out of a Craze for Novelty: The Begriffsschrift 1879 and 1893', tr. M. Beaney in Beaney and Reck 2005, II, pp. 13–28
- Wright, Crispin, 1983, *Frege's Conception of Numbers as Objects*, Aberdeen: Aberdeen University Press
- Yourgrau, Palle, 1982, 'Frege, Perry, and Demonstratives', *Canadian Journal of Philosophy*, 12: 725–52
- _____, 1986–87, 'The Path Back to Frege', *Proceedings of the Aristotelian Society*, 87: 169–210

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